Industrial Management & Data Systems

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Roles of interactivity, trust and perceived effectiveness of e-commerce institutional mechanisms

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Received 21 July 2015
Revised 19 December 2015
23 February 2016
Accepted 23 February 2016

Abstract

Purpose – Retaining customers is very important for the survival of e-commerce sellers. The purpose of this paper is to investigate the roles of computer-mediated communication (CMC) tools, interactivity, trust and perceived effectiveness of e-commerce institutional mechanisms (PEEIM) in influencing customer's repurchase intention in the Chinese online e-commerce marketplace.

Design/methodology/approach – The research model is empirically tested using survey data analyzed with partial least squares structural equation modeling.

Findings – This study confirms the positive relation between customer satisfaction and trust in the seller, which further contributes to repurchase intention. Results also support the positive influences of effective use of an instant messenger and feedback system on customer perceived interactivity, which helps enhance trust in the seller. PEEIM demonstrates interesting results regarding its moderating effects.

Research limitations/implications – In the future, researchers can extend the study to other e-commerce platforms and take trust transfer effects and product categories into consideration.

Practical implications – This study highlights the importance to manage trust, PEEIM, interactivity and CMC tools in e-commerce platforms, assisting practitioners to develop appropriate business strategies and processes to retain customers.

Originality/value – This study extends previous investigations by integrating trust and PEEIM with interactivity and testing the model in the context of the Chinese online marketplace.

Keywords Trust, Interactivity, Online repurchase intention, Partial least square modeling, Perceived effectiveness of e-commerce institutional mechanism

Paper type Research paper

1. Introduction

The rapid growth of the online market has created both opportunities and challenges for the e-commerce online websites. According to Reichheld and Schefter (2000), the cost of

The authors acknowledge the financial support from the National Natural Science Foundation of China (NSFC), International Doctoral Innovation Centre, Ningbo Education Bureau and The University of Nottingham. The project is partially supported by NSFC No. 71402076.

Industrial Management & Data Systems
Vol. 116 No. 8, 2016
pp. 1759-1778

0263-5577
DOI 10.1108/IMDS-07-2015-0296

developing a new customer is considered higher in the e-commerce environment than through traditional channels, but the profit grows faster after the relationship with the seller is developed because repeat online customers tend to spend more than they do in the beginning. Therefore, in order to stay competitive in the marketplace, it is important for online sellers to attract existing customers to conduct repeat purchases (Chiu *et al.*, 2009). Based on the research of Mainspring and Bain & Company (2000), existing customers' loyalty and retention are crucial to the success of e-commerce. For instance, to balance the cost invested, online sellers need no less than four times repurchases. This leads to the following question: what factors drive online customers to repurchase from the same seller? The main objective of this study is to examine potential factors that are crucial to the achievement of online repurchases, especially the roles of computer-mediated communication (CMC) tools, interactivity, trust and perceived effectiveness of e-commerce institutional mechanisms (PEEIM). Understanding how online customer repurchase intention can be affected will lead to better business strategies and long-term profitability to online sellers, which further contribute to long-run success in the online market.

This research uses Chinese e-commerce platform Taobao.com as an example. Founded by the Alibaba Group in 2003, Taobao.com is a dominant consumer-to-consumer (C2C) platform in China. It is also one of the top 10 most visited websites in the world according to Alexa Internet. In 2015, in the 11.11 Global Shopping Festival, the Alibaba Group set a new record with a total gross merchandise volume of $14.3 billion (91.2 billion RMB), and the total number of mobile buyers on Tmall.com and Taobao Marketplace was 95 million, according to the data released by Alibaba. Such success makes Taobao.com the most representative e-commerce platform in China.

One factor of Taobao.com's success can be linked to the effective use of CMC tools (Ou *et al.*, 2014). CMC tools are important in online market, particularly in China as they enhance interactivity and contribute to better buyer-seller communication which is positively related to trust, a critical factor to the success of online transactions (Ou *et al.*, 2014). Previous studies have already shown that trust plays a central role in online customer behavior by reducing customer perceived risks and creating positive attitudes (McKnight *et al.*, 2002; Pavlou and Fygenson, 2006). Recently, Fang *et al.* (2014) have focused on the role of PEEIM, the moderating effects of which are reported on the relationships between trust, customer satisfaction and customer repurchase intention. They call for future research to further explore the effect of PEEIM in e-commerce environments. Therefore, to examine the factors of online customer repurchase intention, this research adopts the model provided by Fang *et al.* (2014) and extends it by including CMC tools and interactivity as extra influential factors. Moreover, we also attempt to explore the moderating effect of PEEIM between interactivity and repurchase intention. It allows us to see how interactivity affects the repurchase intention under boundary conditions. Using Taobao.com as an example, the research can lead to a better understanding of online repurchase behavior in the Chinese context.

This study makes several contributions to the literature and Chinese online market. First, by extending the model provided by Fang *et al.* (2014), this study confirms the importance of satisfaction and trust in the achievement of customer repurchase intention. Second, this study shows that interactivity is influenced by the effective use of CMC tools, and can increase the buyers' trust in sellers. Moreover, PEEIM moderates the relationship between interactivity and repurchase intention, although it does not significantly moderate the relationships between satisfaction, trust and repurchase intention. The new findings show that PEEEIM plays different roles in e-commerce platforms like Taobao.com compared to other online vendors.

This paper proceeds as follows. The next section reviews previous literature and theoretical development related to trust, PEEIM and interactivity. Next, research framework and corresponding hypotheses are developed to guide the research. Then the methodology and data analysis are presented. After that, the paper discusses research findings and lists possible limitations before drawing a conclusion.

2. Literature review

2.1 Trust

The definition of trust often contains two essential elements: first, the expectation that another party is reliable (Rotter, 1980); and second, the expectation-based behavioral intentions which involve potential loss (Deutsch, 1958). Mayer *et al.* (1995) define it as "the willingness of a party to be vulnerable to the action of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (p. 712).

Trust can be treated as a multidimensional concept with three dimensions – benevolence, integrity and competence (or ability) (Chiu *et al.*, 2009; Jarvenpaa *et al.*, 1998; Mayer *et al.*, 1995). In the online marketplace, competence (or ability) is the vendor doing its job to meet the customer's expectation, integrity is vendor honesty and reliability, and benevolence is the vendor being concerned and acting in the customer's best interest (McKnight *et al.*, 2002). If all the three dimensions are perceived to be high, the trustee will be considered trustworthy (Mayer *et al.*, 1995). High level of trust will reduce the perceived risks, create positive attitudes (Jarvenpaa *et al.*, 2000; McKnight *et al.*, 2002; Pavlou and Fygenson, 2006) and enhance collaboration (Gambetta, 2000; Joubert and Wishart, 2012).

2.2 PEEIM

Institutional mechanisms refer to the structures provided by third parties that support and protect the success of transactions (Pavlou and Gefen, 2004). Based on the concept of institutional mechanisms, the customers' PEEIM can thus be defined as "online customer perceptions that third-party safeguarding mechanisms, escrow service and privacy protection exist to protect them against potential risks in the e-commerce environment" (Fang *et al.*, 2014, p. 409). For example, online escrow services can guarantee the transactions through its secured transaction mechanism which releases the payment only when satisfactory merchandise is received (Hu *et al.*, 2004), and customer perceived effectiveness is the extent to which they believe their expectation will be fulfilled in terms of its effectiveness (Pavlou and Gefen, 2005). Credit card online payment guarantee is another example to protect customers from potential loss by financial institutions (Fang *et al.*, 2014).

Some concepts can be confused with PEEIM, such as structural assurance (Mcknight *et al.*, 1998) and institutional structures (Pavlou and Gefen, 2004). There are two distinguishing characteristics of PEEIM: first, PEEIM eliminates both the potential relationship-specific risks and system-dependent uncertainty while institutional structure only focuses on the transaction with one specific vendor; and PEEIM emphasizes the effect of reducing risks through the third party's guarantee compared with structural assurance (Fang *et al.*, 2014).

2.3 Interactivity

Interactivity, in the online marketplace, is defined as a high level of engagement and communication between the buyer and the seller perceived by the buyer (Ou *et al.*, 2014). The concept of interactivity was originally proposed by Newhagen *et al.* (1995) as

a psychological factor, consisting of two dimensions: "(1) viewers' psychological sense of efficacy and (2) viewers' sense of the media system's interactivity" (Song and Zinkhan, 2008, p. 100). Many subsequent studies have extended the two dimensions into three: active control, synchronicity and two-way communication (Liu, 2003; Lowry *et al.*, 2009). Active control measures the degree of active control that parties have for the communication, and synchronicity represents the level to which the communication is synchronized, while two-way communication is about the extent to which the communication is mutual (Ou *et al.*, 2014). In this study, we adopt the three-dimensional conceptualization as it emphasizes immediate and mutual communication.

Some online vendors adopt inquiry ticket to interact with the customers, but it can take one or two days for customers to get responses, which is not efficient. Another example of interactivity is CMC technology. Sellers and customers usually use CMC tools such as WangWang in Taobao.com to communicate with each other and build a more trust-based relationship (Ou *et al.*, 2014).

Table I summarizes the previous literature that studies trust, PEEIM or interactivity. This study intends to propose a framework that integrates the three very important variables and see how they together shape the repurchase intention in the online marketplace.

3. Research model and hypothesis development

3.1 Effect of trust in the seller on repurchase intention

Trust has been seen as a factor that positively affects customer intention and behavior in the conventional marketplace (Curtis *et al.*, 2011; Schurr and Ozanne, 1985). Under the e-commerce environment, the risk and uncertainty involved in a transaction are typically high (Gefen *et al.*, 2003). Due to asymmetry, lack of control and potential opportunism, online consumers rely heavily on trust to reduce the uncertainty (Gefen and Straub, 2004; Morrison and Firmstone, 2000) and trust can be more important in the buyer-seller relationships online than in traditional marketplace (Hoffman *et al.*, 1999; Pavlou and Fygenson, 2006; Riegelsberger *et al.*, 2005). High level of the online customer trust generates more favorable attitudes toward the online store and increases the consumer's purchase intention (Jarvenpaa *et al.*, 2000). Without sufficient trust online trade cannot even be initiated (Hu *et al.*, 2010). Moreover, with trust the online customer is willing to share more information with the seller, and it leads to more tailed products offered to the customer and in return will gain the customer's loyalty (Reichheld and Schefter, 2000). In another word, trust reduces the perceived risks and uncertainty involved in repurchase, lowers the barriers between sellers and consumers and increases customer intention to buy again (Teo and Liu, 2007). Therefore, we propose a positive relationship between trust in seller and customer online repurchase intention:

H1. Trust in seller has a positive effect on repurchase intention.

3.2 Effect of customer satisfaction on trust in seller

Customer satisfaction is the customer's overall attitude toward a supplier (Levesque and McDougall, 1996). It is based on the difference between customers' expectation and what they really get (Hansemark and Albinsson, 2004) and is the result of a cognitive and affective evaluation related to cumulative experiences with a certain supplier (Homburg and Giering, 2001). Compared to unsatisfied customers, satisfied customers are less sensitive to price and less interested in competitors (Hansemark and Albinsson, 2004).

Author(s)	Key variables	Study
Fang *et al.* (2014)	Satisfaction Trust PEEIM	Investigates the moderating role of PEEIM in the relationships between customer satisfaction, trust and online repurchase intention
Ou *et al.* (2014)	CMC tools Presence Interactivity Trust Swift guanxi	Investigates how CMC tools contribute to online repurchase intention by building swift guanxi and trust through interactivity and presence
Chiu *et al.* (2012)	Familiarity Value Satisfaction Trust Habit	Examines antecedents of habit, and the moderating role of habit in the relationship between trust and online repeat purchase intention
Ha *et al.* (2010)	Customer information Customer satisfaction Perceived interactivity Customer attitude	Tests alternative models to ascertain the relationships between four constructs and online repurchase intention
Chiu *et al.* (2009)	Trust Perceived ease of use Perceived usefulness Enjoyment	Extends the technology acceptance model (TAM) by including quality dimensions, trust and enjoyment to understand customer online repurchase intention
Cyr *et al.* (2009)	Interactivity Efficiency Effectiveness Enjoyment Trust	Examines the relationship of perceived interactivity and efficiency, effectiveness, trust and enjoyment which contribute to e-loyalty
Lowry *et al.* (2009)	CMC interactivity Communication quality Status effects	Investigates how interactivity enhances communication quality and in turn leads to increased process satisfaction by explicating CMC interactivity model
Teo and Liu (2007)	Perceived reputation Size Multichannel integration System assurance Propensity to trust Consumer trust Attitude Perceived risk	Investigates the relationship between online customers trust and their willingness to buy, and factors that influence trust
Li *et al.* (2006)	Quality of alternativeness Investment size Satisfaction Communication quality Opportunistic behavior Commitment Trust	Focusses on the mediating role of commitment and trust in the relationship between user and website
Flavian *et al.* (2006)	Perceived usability Satisfaction Consumer trust	Examines the influence of perceived usability, satisfaction and consumer trust on website loyalty

(*continued*)

Table I.
A summary of previous studies about trust, PEEIM or interactivity

Author(s)	Key variables	Study
Pavlou and Gefen (2004)	Perceived effectiveness of IT-enabled institutional mechanisms Trust	Investigates the role played by perceived effectiveness of three IT-enabled institutional mechanisms-feedback mechanisms, third-party escrow services, and credit card guarantees in forming buyer trust, leading to transaction intentions
Gefen and Straub (2004)	Social presence Trust	Focusses on the influence of the four dimensions of trust on purchase intention in B2C e-commerce, and the importance of social presence
Gefen *et al.* (2003)	Trust The perceived usefulness (PU) of using the new IT The perceived ease of use (PEOU) of the new IT	Explores customer's intention of using a business-to-consumer (B2C) website by integrating trust-based antecedents and the technological attribute-based antecedents found in TAM
Jarvenpaa *et al.* (2000)	Perceived size Reputation Risk perception Attitudes Trust	Investigates factors that influence trust and the relationship between online customers trust and their willingness to buy

Table I.

According to Mayer *et al.* (1995), the outcome of a trusting behavior will affect trust at the next interaction. In buyer-seller relationship, a buyer's satisfaction about the outcome will increase its perception of the seller's benevolence and credibility (Ganesan, 1994). In the context of e-commerce, satisfaction of previous purchase experience enables the customer to form a positive opinion of the performance of the seller and thus enhances the confidence of the customer that the seller will have integrity, competence and benevolence (Fang *et al.*, 2014). Previous studies have given empirical verification of the positive relationship between customer satisfaction and trust in the seller in online background (Flavian *et al.*, 2006; Li *et al.*, 2006). Hence, the following hypothesis is proposed:

H2. Customer satisfaction with seller has a positive effect on trust in seller.

3.3 Effect of interactivity on repurchase intention and trust in seller

High-quality interactivity in the online marketplace enables the buyer and the seller to communicate efficiently and effectively (Teo and Liu, 2007). Interactivity is found to be important for e-commerce customer loyalty because it can improve customer's information-searching experience and increase the amount of information available to the customer and the speed of accessing the information (Srinivasan *et al.*, 2002; Ou *et al.*, 2014). Moreover, since interactivity is a two-way communication, each party (buyer and seller) can share his/her opinion for some disagreement, discuss the price and postage of products or services, and help the seller to know more about the customer's preferences so that they can respond to more personalized requests (Ou *et al.*, 2014). Studies have shown that interactivity can transform visits to purchases and is the major concern of repurchase decisions (Ghose and Dou, 1998; Ha *et al.*, 2010). Thus, the following hypothesis is proposed:

H3a. Interactivity has a positive impact on repurchase intention.

High-quality interactivity can be the foundation of trust (Wu and Chang, 2005). Communication and information exchange are important parts of interactivity, and

they are found to have a significant influence on trust (Selnes, 1998). Giving buyers the sense of active control can increase their engagement with the sellers and make them feel more involved with the seller, while two-way communication and synchronized interactions can make the buyers feel sellers approachable and willing to hear the voice of buyers (Yoon *et al.*, 2008). With proper interactions, sellers can show their knowledge to the buyers and thus demonstrate their ability to offer a satisfied product and/or service. Moreover, the level of sellers' trustworthiness and reliability can be reflected from the interactivity. Also, via communications, sellers can express their concern for buyers and show their willingness to act in buyers' best interests (Ou *et al.*, 2014). Therefore, trust can be cultivated from interacting with others:

H3b. Interactivity has a positive effect on trust in seller.

3.4 Moderating the role of PEEIM

The function of trust that affects people's behaviors is to reduce uncertainty, but the effectiveness varies by the level of uncertainty (Chiu *et al.*, 2012). According to Schlosser *et al.* (2006), when perceived risk is low, trust plays a less significant role in purchase intention compared to when perceived risk is high. E-commerce institutional mechanisms are risk-mitigating mechanisms (Fang *et al.*, 2014). When the environment is protected by high level of PEEIM, it decreases the perceived risk and uncertainty related to the e-commerce environment. As a result, it reduces the level of trust needed to form the repurchase intention. So with high level of PEEIM, the role of trust in forming customer repurchase intention is less significant. Conversely, when the environment is perceived as risky with low level of PEEIM, customer behavior tends to be more dependent on trust. Thus, following Fang *et al.* (2014), we claim that consumers' PEEIM can serve as a moderator of the relationship between trust and repurchase intention, and such moderating effect is negative:

H4a. PEEIM negatively moderates the relationship between trust in seller and repurchase intention.

The role of interactivity in online transactions is to offer better communication which helps to build a high-quality relationship between the seller and the buyer and convert visitors into buyers (Ou *et al.*, 2014). Moreover, customers rely heavily on the information provided during interactivity and it is seen as a supplementary means to the customer's decision-making process (Fang, 2012). It reduces perceived risks by allowing the customer to gather complete and accurate information and thus enhances the customer's willingness to purchase (Fiore *et al.*, 2005). In a risky environment, the role of interactivity can be more significant because customers are more likely to refer to CMC tools such as instant message and feedback system for gathering information in order to reduce risks involved in the transaction with the seller. When the environment is protected by PEEIM, less importance is placed on interactivity because one function of PEEIM is to reduce risks involved in the specific buyer-seller relationship. Hence, the following hypothesis is proposed:

H4b. PEEIM negatively moderates the relationship between interactivity and repurchase intention.

When the PEEIM level is high, it can provide a secure guarantee for customers to conduct transactions in the platform. Fang *et al.* (2014) argue that when customers are confident that they are protected by the institutional mechanism, they will rely more

on previous experience to judge the seller rather than evaluating it repeatedly. Nevertheless, according to decision-making theory, when market uncertainty is high, people tend to engage in exchange relations with those with whom they have prior transaction experience (Podolny, 1994). In the online marketplace, this happens as customers have better knowledge about a seller if they have transacted with the seller before and are satisfied with the results. When the environment is not protected, customers are more sensitive to risks and tend to rely more on previous knowledge and experience as additional assurance to reduce risks and make decisions. On the contrary, with a high level of PEEIM, customers are aware that their transactions are protected, so they worry less about potential financial losses. Due to the reduced likelihood of losses in a secured environment, the role of previous satisfaction can be less significant. Therefore, instead of following Fang *et al.* (2014), the following hypothesis is proposed:

H4c. PEEIM negatively moderates the relationship between customer satisfaction and trust in seller.

3.5 Effect of CMC tools on interactivity

CMC tools can play an important role in connecting the buyer and the seller to form a more effective communication environment (Kaplan and Haenlein, 2010). Typical CMC tools include the feedback system such as customer review board and instant messenger (Thorsten *et al.*, 2010). These tools provide opportunities for experience sharing and interactive information exchange among customers or between customers and sellers (Kaplan and Haenlein, 2009).

Instant messenger acts as an online private communication channel to help the customer get product details they need, negotiate about product price and verify the transaction information (Cho *et al.*, 2005). In Taobao.com, sellers and buyers use WangWang – an instant messenger that is embedded in Taobao.com and can also be used as an individual app to communicate with each other. With such two-way chat tools, the customer can send product photos immediately to seller to check the product details as well as use avatars and emoticons to bring the two parties closer (Ou and Chan, 2014). Such an information exchange channel can therefore improve the sensation of interactivity:

H5. Effective use of instant messenger has a positive impact on interactivity.

The feedback sytem in the online purchasing website provides a platform to display different personal evaluations from customers about a specific product and gives the seller an opportunity to respond to customers' evaluations (Ou *et al.*, 2014). When a specific transaction completes, the system will ask the customer to rate the product and service quality of the seller (Pavlou and Dimoka, 2006). Through this feedback system, customers can easily check the previous transaction reviews and comments in order to decide whether or not to purchase. Therefore, reviews can enhance the interactivity through a number of word-of-mouth communications from former customers. Here, the following hypothesis is proposed:

H6. Effective use of feedback system has a positive impact on interactivity.

Figure 1 presents the proposed research model.

Although as shown in Table I existing studies have studied trust, PEEIM or interactivity, our study extends Fang *et al.*'s (2014) work by studying the impact of

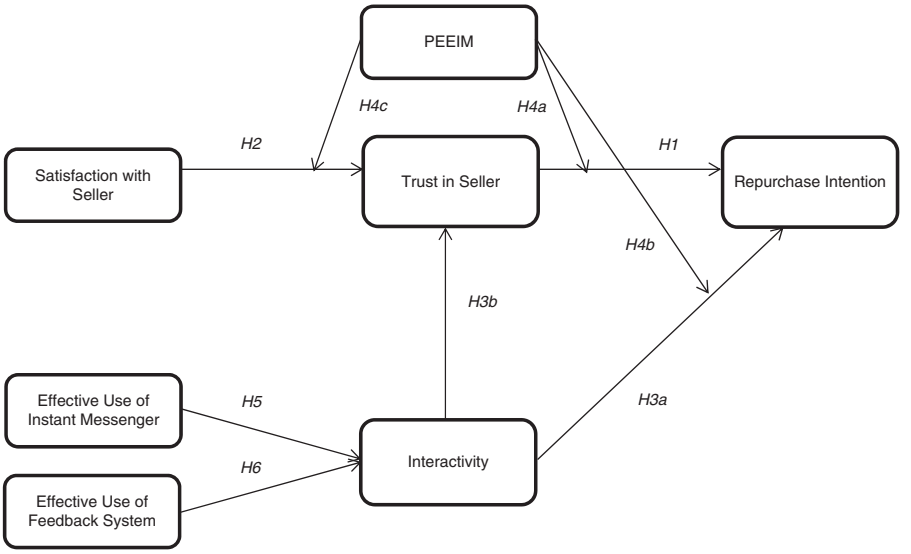


Figure 1.
Research model

perceived interactivity on trust; moreover, our model includes CMC tools as an influential factor, and attempts to investigate the moderating effect of PEEIM between interactivity and repurchase intention which has not been studied before.

4. Methodology

4.1 Measurement development

To increase the validity and reliability of the results, each construct in the model has multiple items and most measurement items used in this research are adapted from previous studies with minor changes. Specifically, the items of PEEIM were used for capturing the buyer's perception of third-party protection and the items of trust were used for evaluating the buyer's perception of the seller's trustworthiness in terms of integrity, competence and benevolence, adapted from Fang *et al.* (2014). The items of active control, two-way communication and synchronicity were used to form the second-order construct of interactivity following Ou *et al.* (2014). Research constructs, measured items used in this research and their sources are listed in the Appendix. A ten-point Likert scale was used to measure all items, with 1 representing "strongly disagree" and 10 representing "strongly agree," indicating the respondent's level of agreement toward the given statement.

4.2 Questionnaire design and data collection

We used a questionnaire survey to collect data. A pilot study was conducted with a small sample to validate the adapted measurement items before distributing the final questionnaire. Research data were collected from the university students. They fit well for this research because they are so-called "Net Generation" – extensive users of the internet and the most active segment of online shoppers, so they can reflect the behaviors of heavy online shoppers (Comegys *et al.*, 2006; Li *et al.*, 2006).

Participants were asked to answer the questionnaire only if they had several purchase experiences on Taobao.com. In all, 210 samples of the questionnaire were sent out with 66.66 percent valid results. Among the 150 valid samples, 40 percent are males and 60 percent are females.

5. Data analysis

The research model was examined with partial least squares structural equation modeling using SmartPLS 3.0 (Hair *et al.*, 2013). To confirm that no multicollinearity issue exists, the variance inflation factor (VIF) was calculated. The VIF value for each construct was below the suggested threshold of 10.0 (from 1.227 to 1.880) (Neter *et al.*, 1990).

5.1 Measurement model

The reliability and validity were examined in order to test the measurement model. A review of measurement items showed some low outer loadings and high cross-loadings, and a few items were removed before continuing the measurement test. The items that have been removed are marked with asterisks in the Appendix. The item loadings and cross-loadings of the remaining items are listed in Table II.

This study used Cronbach's α and composite reliability to evaluate the internal consistency reliability. According to Nunnally and Bernstein (1994), the reliability can be confirmed if the Cronbach's α is above 0.70 and the composite reliability is also over 0.70. As shown in Table III, the Cronbach's α for each latent construct is higher than 0.70 (from 0.704 to 0.923). Moreover, the composite reliability for each latent construct is also above 0.7 (from 0.832 to 0.945). Therefore, the internal consistency reliability is confirmed with confidence.

The average variance extracted (AVE) and Fornell-Larcker Criterion were used to assess the convergent and discriminant validity. For AVE, it should exceed 0.5 to have an acceptable degree of variance between constructs (Fornell and Larcker, 1981). As shown in Table III, all the AVE values are higher than 0.5 (from 0.626 to 0.811). As shown in Table IV, the correlations between two constructs are all smaller than the square root of the construct's AVE, which fits the criterion. Based on the AVE and Fornell-Larcker Criterion, the convergent and discriminant validity are verified.

5.2 Structural model

The results of the structural model are shown in Figure 2. The model explains 20.5 percent of the variance in repurchase intention, 61.3 percent of variance in trust in the seller and 39.6 percent of variance in interactivity. The results support the positive effect of trust in seller on repurchase intention (*H1*: $\beta = 0.344$, $t = 3.227$, $p < 0.01$). Also, the positive effect of customer satisfaction on trust in seller is confirmed to be significant (*H2*: $\beta = 0.617$, $t = 9.689$, $p < 0.01$). Moreover, as hypothesized, interactivity has a significant positive impact on trust in seller (*H3b*: $\beta = 0.180$, $t = 2.270$, $p < 0.05$), and effective use of instant messenger and effective use of feedback system both significantly influence interactivity (*H5*: $\beta = 0.382$, $t = 5.195$, $p < 0.01$; *H6*: $\beta = 0.375$, $t = 4.623$, $p < 0.01$). In addition, PEEIM is also found to significantly and negatively moderate the relationship between interactivity and repurchase intention (*H4b*: $\beta = -0.235$, $t = 1.928$, $p < 0.05$).

However, interactivity is not found to be a significant influential factor for repurchase intention (*H3a*: $\beta = 0.090$, $t = 0.813$, $p > 0.05$). The moderating effects of PEEIM in the relationships between satisfaction with seller, trust in seller and repurchase intention are not supported as well (*H4a*: $\beta = 0.233$, $t = 1.790$, $p > 0.05$; *H4b*: $\beta = 0.049$, $t = 0.851$, $p > 0.05$). The possible explanations about such results will be discussed in the next section.

Table II.
Item loadings and cross-loadings

Constructs	Items	EFS	EIM	RI	TS	SS	I	AC	TC	SN	PEEIM
Effective use of feedback system (EFS)	EFS 1	0.830	0.342	0.070	0.105	0.146	0.357	0.279	0.298	0.295	0.080
	EFS 2	0.907	0.369	0.020	0.176	0.246	0.457	0.442	0.361	0.306	0.264
	EFS 3	0.949	0.332	0.074	0.127	0.203	0.484	0.434	0.391	0.352	0.221
	EFS 4	0.911	0.341	0.097	0.206	0.283	0.582	0.558	0.489	0.354	0.313
Effective use of instant messenger (EIM)	EIM 1	0.318	0.816	0.151	0.331	0.336	0.463	0.433	0.429	0.237	0.148
	EIM 2	0.223	0.841	0.231	0.301	0.295	0.414	0.462	0.345	0.175	0.168
	EIM 3	0.271	0.809	0.172	0.204	0.216	0.340	0.267	0.334	0.206	0.113
	EIM 4	0.448	0.836	0.087	0.263	0.286	0.399	0.436	0.298	0.231	0.158
Repurchase intention (RI)	RI 1	0.070	0.111	0.769	0.288	0.342	0.185	0.216	0.126	0.107	0.161
	RI 2	0.073	0.159	0.785	0.355	0.378	0.184	0.195	0.237	−0.036	0.142
	RI 3	0.028	0.190	0.818	0.272	0.282	0.124	0.208	0.129	−0.072	0.157
Trust in seller (TS)	TS 1	0.171	0.246	0.302	0.722	0.620	0.410	0.393	0.371	0.212	0.359
	TS 2	0.096	0.302	0.263	0.803	0.527	0.271	0.295	0.283	0.037	0.356
	TS 3	0.081	0.223	0.356	0.733	0.514	0.333	0.303	0.376	0.078	0.265
	TS 4	0.120	0.279	0.372	0.879	0.618	0.334	0.335	0.372	0.051	0.383
	TS 5	0.219	0.201	0.276	0.816	0.635	0.437	0.428	0.433	0.156	0.319
	TS 6	0.128	0.341	0.263	0.734	0.613	0.497	0.506	0.453	0.214	0.280
Satisfaction with seller (SS)	SS 1	0.178	0.176	0.319	0.679	0.870	0.465	0.456	0.407	0.244	0.402
	SS 2	0.187	0.294	0.426	0.686	0.882	0.510	0.499	0.413	0.319	0.319
	SS 3	0.280	0.451	0.274	0.576	0.770	0.420	0.495	0.329	0.176	0.273
	SS 4	0.204	0.260	0.404	0.554	0.796	0.273	0.328	0.235	0.072	0.248
Interactivity (I)	AC 1	0.462	0.408	0.278	0.363	0.443	0.595	0.850	0.364	0.213	0.276
	AC 2	0.420	0.460	0.197	0.483	0.505	0.796	0.919	0.602	0.393	0.446
	TW 1	0.428	0.383	0.227	0.442	0.412	0.812	0.511	0.926	0.462	0.275
	TW 2	0.387	0.416	0.173	0.468	0.376	0.843	0.533	0.932	0.523	0.306
	SN 1	0.331	0.214	−0.018	0.096	0.188	0.647	0.322	0.444	0.914	0.125
	SN 2	0.342	0.259	0.013	0.199	0.274	0.700	0.331	0.53	0.927	0.132
Perceived effectiveness of e-commerce institutional mechanisms (PEEIM)	PEEIM 1	0.153	0.170	0.152	0.363	0.316	0.262	0.358	0.203	0.054	0.888
	PEEIM 2	0.295	0.205	0.229	0.410	0.388	0.357	0.384	0.329	0.124	0.897
	PEEIM 3	0.163	−0.011	0.029	0.206	0.165	0.300	0.276	0.231	0.230	0.638

	Cronbach's α (recommended minimum value > 0.70)	Composite reliability (recommended minimum value > 0.70)	AVE (recommended minimum value > 0.50)
Effective use of feedback system (EFS)	0.923	0.945	0.811
Effective use of instant messenger (EIM)	0.845	0.896	0.682
Repurchase intention (RI)	0.704	0.834	0.626
Trust in seller (TS)	0.873	0.899	0.614
Satisfaction with seller (SS)	0.849	0.905	0.690
Interactivity (I)	0.757	0.876	0.544
Active control (AC)	0.730	0.879	0.784
Two-way communication (TC)	0.842	0.927	0.864
Synchronicity (SN)	0.820	0.917	0.848
Perceived effectiveness of e-commerce institutional mechanisms (PEEIM)	0.829	0.854	0.666

Table III.
Cronbach's α, composite reliability and average variance extracted

	EFS	EIM	RI	TS	SS	I	AC	TC	SN	PEEIM
Effective use of feedback system (EFS)	0.900									
Effective use of instant messenger (EIM)	0.382	0.826								
Repurchase intention (RI)	0.074	0.194	0.791							
Trust in seller (TS)	0.176	0.339	0.391	0.783						
Satisfaction with seller (SS)	0.251	0.348	0.428	0.755	0.831					
Interactivity (I)	0.535	0.495	0.211	0.490	0.509	0.738[a]				
Active control (AC)	0.492	0.492	0.260	0.485	0.538	0.798	0.885			
Two-way communication (TC)	0.438	0.430	0.215	0.490	0.423	0.891	0.562	0.929		
Synchronicity (SN)	0.366	0.258	−0.002	0.162	0.253	0.732	0.355	0.531	0.921	
Perceived effectiveness of e-commerce institutional mechanisms (PEEIM)	0.258	0.179	0.193	0.419	0.378	0.368	0.419	0.312	0.139	0.816

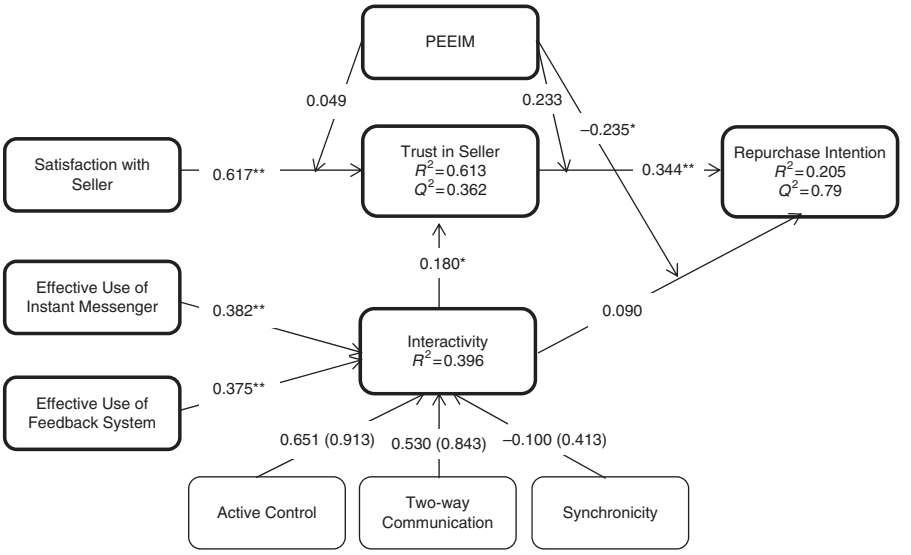
Table IV.
Fornell-Larcker Criterion

Notes: [a]Interactivity is a reflective-formative second-order construct. Interactivity is formatively measured by three first-order constructs (active control, two-way communication and synchronicity), and each of the first-order constructs is reflectively measured by items

6. Discussion

6.1 Key findings and implications for theory

This research integrates trust, interactivity, PEEIM and CMC tools to study their effects on shaping online repurchase intention. This study has the following major findings and contributions. First, the result confirms the positive relationship between customer satisfaction and trust as well as the relationship between trust and repurchase intention, which is consistent with the findings from Fang *et al.* (2014). It provides empirical support that, in the Chinese C2C retail market, meeting customers' requirements and making them satisfied will enhance their trust in the seller and thus lead to repurchase intention.



Notes: (1) Active control, two-way communication and synchronicity are the first-order constructs that are measured by their corresponding reflective items. The latent variable scores for these three first-order constructs were obtained from PLS analysis using repeated indicator approach (Hair *et al*., 2013). Their latent variables obtained were then used as the manifest variables for the second-order construct Interactivity. The numbers outside the brackets represent the weights of formative indicators, while the numbers in the brackets represent the loadings of the formative indicators; (2) interactivity is a formative variable and thus is not listed for Q^2 value. $^{**}p<0.01$; $0.01<{}^{*}p<0.05$

Figure 2.
Research model results

Second, this study highlights the importance of CMC tools and interactivity. CMC tools are being widely used in many e-business platforms, while limited attention has been paid to how those tools improve business performance. Results from this study show that effective use of CMC tools can improve the interactivity perceived by customers, which builds trust toward the seller. Consistent with Ou *et al.*'s (2014) findings, the integration of CMC tools into the online marketplace facilitates communication and interaction in the online marketplace. Better communications provide channels for the seller to screen their knowledge to the product and concern to the customers, and lead to an increase in trust in this seller-consumer relationship.

Moreover, this research studies the role of PEEIM. Previous work has studied PEEIM in the context of online retailer; for example, Fang *et al.* (2014) tested the moderating roles of PEEIM in Amazon.com; however, the context of C2C retailing platform is not given much attention. This study tests the roles of PEEIM in the online platform of C2C retail, and the results reveal some interesting findings that are different from previous studies. The results do not support significant moderating effects of PEEIM between satisfaction and trust or between trust and repurchase intention. One possible explanation can be that in this research we use Taobao.com as an example, which is the leading e-commerce platform in China. To promote a safe trading environment, all the users on Taobao.com are required to obey certain rules and regulations such as service rules, trust rules, user registration and real name

authorization rules (Li and Liu, 2007). A trust forum is also provided where there are guidelines and tips on safe online transactions, password protection and identification of fraud e-mails and so on (Lu *et al.*, 2007). Moreover, people tend to trust the platform due to its good reputation (Swift, 2001). Thus, it is possible that online buyers will form a positive attitude toward it and consider it as a platform with a reliable protection system. According to McKnight *et al.* (1998), the security one feels about a situation leads to institution-based trust. Thus, this Taobao-based trust will mask the effect of PEEIM. If customers believe Taobao.com is secured in general, they will make a judgment about the trustworthiness of the seller based on direct experience with the seller without considering the effectiveness of the third-party protection. Similarly, PEEIM will not affect the level of trust needed to form repurchase intention as well.

In addition, the results show that the relationship between interactivity and repurchase intention is not significant whereas the negative moderating effect of PEEIM in this relationship is confirmed. It indicates that customers tend to rely on interactivity to make repurchase decisions only when the level of PEEIM is low. Without the effect of PEEIM, interactivity cannot affect the repurchase intention until trust is developed toward the seller. The possible explanation can be that Taobao.com is a platform with millions of individual buyers and sellers, and the risks involved in the transaction with a particular seller are so high that communication with the seller is not enough to lead to repurchase intention regardless of the fact that Taobao.com is perceived as a reliable platform. However, with a low level of PEEIM, customers are aware that their transactions are protected by a third party but the protection is weak; so they are likely to refer to CMC tools to communicate with the seller and get information, which is seen as additional assurance to enhance their confidence and thus it leads to repurchase intention.

6.2 Implications for practice

This study has several practical implications for online sellers and practitioners. It recommends that online sellers should try their best to meet customer expectation and strategically forge a positive and trust-based relationship with them. For example, they could offer better quality products and provide after-sales service. Moreover, practitioners could consider enhancing online interactivity by embedding CMC tools into the online platform. Applying instant messenger and feedback system can make the sellers approachable to their customers, and assist the customers to better communicate and interact with the sellers. Sellers could give timely response to their queries via instant messenger. They could also present their gratitude to customers' positive feedback, and respond to customers' negative evaluations and suggestions for improvement, so that the trust built lasts beyond one-time purchase.

6.3 Limitation and further research

This study empirically investigates factors that influence repurchase intention in Taobao.com, and it involves some limitations that future research could look into. First, this research focuses on a single Chinese e-commerce platform, Taobao.com. Although Taobao.com is widely perceived as dominating the Chinese online marketplace, the rapid growth of e-commerce in China has brought successes to other e-commerce platforms such as DJ.com and JUMEI.com. Future research can extend the investigation to other platforms to better understand customer behaviors in the Chinese e-commerce market.

Second, trust transfer effects may exist in the online marketplace. It is possible that buyers' positive attitude toward a platform will transfer to the sellers on the platform

because of their associations, according to trust transfer theory (Stewart, 2003). Hence further research can take the effect of trust transfer into consideration and test its role in the online marketplace.

Third, product categories may also be an influential factor. Consumers' online behaviors may be different across product categories. For example, customers may have different behaviors when dealing with search products and experience products. The difference between product categories can be investigated in the future.

7. Conclusion

This study examines the roles of trust, PEEIM, interactivity and CMC tools in influencing the consumer's repurchase intention in the Chinese online marketplace. While customer satisfaction positively influences trust in the seller, which plays a significant role in increasing the repurchase intention, PEEIM does not moderate those relationships. Moreover, interactivity, influenced by the effective use of CMC tools, has a significant and positive effect on trust in seller, and its interaction with PEEIM can influence the repurchase intention. Using Taobao.com as an example, this study extends previous studies with interesting findings and provides a better understanding for the repurchase phenomenon in the Chinese online marketplace.

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Appendix

Questionnaire items (general perceptions about online purchase)		Sources
Perceived effectiveness of e-commerce institutional mechanisms (Scale 1-10)		
PEEIM 1	When buying online, I am confident that there are mechanisms in place to protect me against any potential risks (e.g. leaking of personal information, credit card fraud, goods not received, etc.) of online shopping if something goes wrong with my online purchase	Fang *et al.* (2014)
PEEIM 2	I have confidence in third parties (e.g. SafeTrader, TRUSTe) to protect me against any potential risks (e.g. leaking of personal information, credit card fraud, goods not received, etc.) of online shopping if something goes wrong with my online purchase	
PEEIM 3	I am sure that I cannot be taken advantage of (e.g. leaking of personal information, credit card fraud, goods not received, etc.) as a result of conducting purchases online	
PEEIM 4**	I believe that there are other parties (e.g. your credit card company) who have an obligation to protect me against any potential risks (leaking of personal information, credit card fraud, goods not received, etc.) of online shopping if something goes wrong with my online purchase	
Repurchase intention (Scale 1-10)		
Please indicate the degree to which you agree with the following statements concerning your likelihood/probability of buying online again from the vendor you had in mind as you filled out this questionnaire		Fang *et al.* (2014)
PRI 1	In the medium-term?	
PRI 2	In the long-term?	
PRI 3	All things considered, and on a scale from 1-100%, what is the probability that you will purchase online from the same vendor again? _____%	
Trust in seller (Scale 1-10)		
TS 1	I believe that this vendor is consistent in quality and service	Fang *et al.* (2014)
TS 2**	I believe that this vendor is keen on fulfilling my needs and wants	
TS 3	I believe that this vendor is honest	
TS 4**	I believe that this vendor wants to be known as one that keeps promises and commitments	
TS 5	I believe that this vendor has my best interests in mind	
TS 6	I believe that this vendor is trustworthy	
TS 7	I believe that this vendor has high integrity	
TS 8	I believe that this vendor is dependable	
Previous satisfaction with seller (Scale 1-10)		
Please circle the number that best describes how satisfied you are with previous experiences with the vendor		Fang *et al.* (2014)
SS 1	Overall, extremely satisfied	
SS 2	Overall, extremely pleased	
SS 3	My expectations were exceeded	
SS 4	I would recommend this vendor to my friend	
Effective use of instant messenger (Scale 1-10)		
EIM 1	I feel that TaoBao.com's instant messenger (i.e. WangWang) functions as an effective communication channel for me to communicate with this seller	Ou *et al.* (2014)

(*continued*)

Table AI.
Survey questionnaire items

Questionnaire items (general perceptions about online purchase)		Sources
EIM 2	I have used WangWang to verify information with this seller	
EIM 3	I believe that WangWang has facilitated the direct communication and negotiation between this seller and me	
EIM 4	I have great dialogues with this seller in WangWang	
Effective use of feedback system (Scale 1-10)		
EFS 1	I feel confident that TaoBao.com's ratings and feedback mechanism provides accurate information about this seller's reputation	Ou *et al.* (2014)
EFS 2	A considerable amount of useful feedback information about the transaction history of this seller is available through TaoBao.com's ratings and feedback mechanism	
EFS 3	I believe that that the ratings and feedback mechanism in TaoBao.com is effective for buyers to know about this seller	
EFS 4	I believe that the ratings and feedback mechanism in TaoBao.com is reliable and dependable so as to help me evaluate this seller	
Interactivity (Scale 1-10)		
Active control		Ou *et al.* (2014)
AC 1	I felt that I had a lot of control over my experience at this seller's website	
AC 2	While I was on this seller's website, I could choose freely what I wanted to see	
Two-way communication		
TC 1	This seller facilitates two-way communication between him/herself and visitors	
TC 1	This seller gives visitors the opportunity to talk to him/her	
Synchronicity		
SY 1	This seller responded to my questions very quickly	
SY 2	I was able to get information from this seller very rapidly	

Table AI.

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